Commentary

Back to the future: A return to psychedelic treatment models for addiction

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The discovery of the $5HT_{2a}R$ agonist hallucinogen (i.e. classic psychedelic) lysergic acid diethylamide (LSD) by Albert Hofmann in 1943 was a global watershed event. Not only did it spark wide interest in the nature of consciousness and the role of neurotransmission in brain function, it opened new avenues of potential treatment for a range of mental health conditions (Hofmann, 2013). The scientific community of the 1950s through the early 1970s responded to Hofmann's discovery by producing more than 1000 manuscripts describing the treatment of 40,000 patients (Nutt et al., 2013). Despite promising if not remarkable indications of efficacy (Krebs and Johansen, 2012; Savage and McCabe, 1973), sensationalized reports of recreational LSD use prompted legal restrictions that ultimately rendered research with LSD and other classic psychedelics such as psilocybin dormant for decades (Johnson et al., 2008). This may represent one of the greatest missed scientific and medical opportunities of our time.

Fortunately, clinical study of classic psychedelics has recently found new life, with pilot studies suggesting they have efficacy in treating anxiety and depression secondary to life-threating medical illnesses (Gasser et al., 2014; Grob et al., 2011).

Johnson et al.'s (2014) pilot study of psilocybin for tobacco smoking cessation adds to this growing body of literature and is noteworthy for a number of reasons. It is the first clinical trial of a classic psychedelic for an addictive behavior in over 4 decades and the first such trial focused on the treatment of tobacco dependence ever. Although the open-label, single-arm design and small sample preclude definitive conclusions, Johnson et al.'s (2014) observed abstinence rate of 80% at 6-month follow-up is unheard of in the contemporary smoking cessation literature, as even the most intensive of smoking cessation interventions produce abstinence rates of no greater than 59% at similar follow-up intervals (Hall et al., 2009). This finding is even more impressive considering that Johnson et al. (2014) did not administer approved smoking-specific pharmacotherapies (i.e. nicotine replacement therapy, bupropion or varenicline), which are recommended as first-line treatments for tobacco dependence (Fiore et al., 2008).

Yet, these first-line pharmacotherapies require daily use for weeks at a time, are associated with several side effects, and demonstrate poor rates of adherence (Balmford et al., 2011). Johnson et al.'s (2014) results suggest that the treatment of tobacco dependence with three or fewer administrations of a classic psychedelic such as psilocybin, the acute and adverse effects of which are time-limited, may be a more tenable approach.

One might question the wisdom of treating drug addiction with an abusable drug. It is critical to underscore that while classic psychedelics are sometimes used dangerously in recreational contexts, multiple lines of evidence show that they do not lead to compulsive drug-seeking behavior (National Institute on Drug Abuse, 2001, 2005). In several ways classic psychedelics might represent the ideal addiction medications in that they are not addictive themselves; need only be administered in a few controlled and monitored sessions; and often provide individuals with extraordinarily meaningful spiritual experiences (Johnson et al., 2014) that may trigger a spontaneous, dramatic and lasting 'quantum change' in behavior (Miller, 2004).

Of course, future research is needed to more conclusively inform the efficacy of classic psychedelics in treating tobacco and other drug addiction, and indeed, such research is underway (Kupferschmidt, 2014); however, classic psychedelics remain Schedule I substances, despite the lack of a cogent rationale, which poses a substantial obstruction to progress in this field of study (Nutt et al., 2013). It is hoped that this designation will be reconsidered in the near future. Meanwhile, scientists who might assume that this designation is well-founded and are thus skeptical of Johnson et al.'s (2014) results should consider engaging in a hallmark of the scientific process: Replication.

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